

Applicant : William McHugh, et al.
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Attorney's Docket No.: 08935-218001 / M-4926

REMARKS

Applicants have amended claims 26, 36 and 43 and have cancelled claim 44. Applicants acknowledge the Examiner's allowance of claims 8, 9, 15 and 18.

Claims 1-5, 7-13, 15, 18, and 21-43, of which claims 1, 8, 9, 15, 18, 21, 26, 27, 30, 33, 36, 37, and 43 are independent in form, are presented for examination.

Formal Drawings

Applicants thank the Examiner for her indication that the formal drawings filed on December 8, 2000, are acceptable.

Claim Rejections – 35 U.S.C. § 102

The Examiner has rejected claims 1, 3, 5, 10 and 11 under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,626,988 (Daniel-Ivad). Each of claims 1, 3, 5, 10 and 11 recites a battery system comprising a casing configured to receive one or more batteries and a battery comprising a can having a longitudinal axis, a length that is parallel to the longitudinal axis, and a cross section relative to the longitudinal axis that is rectangular for substantially the entire length of the can.

Daniel-Ivad does not anticipate claims 1, 3, 5, 10 and 11, at least because Daniel-Ivad does not disclose or suggest a casing. Instead, Daniel-Ivad discloses a rechargeable battery having a can, which corresponds to the can of the present claims. As such, Daniel-Ivad cannot render claim 1, and claims 3, 5, 10 and 11 (which each depend from claim 1) non-novel.

Daniel-Ivad further does not, contrary to the Examiner's contention, disclose a barrier layer of polytetrafluoroethylene (PTFE) between the cathode and the can. Instead, Daniel-Ivad discloses the addition of small (below 1% by weight) amounts of PTFE to the cathode material to act as a lubricant during powder processing. The PTFE is added and intermixed prior to formation of the cathode, and is thus dispersed throughout the cathode. The PTFE does not form a barrier between the cathode and the can. For this additional reason, claims 10 and 11 are novel over Daniel-Ivad.

For at least the reasons provided above, Daniel-Ivad fails to disclose or suggest the batteries of claims 1, 3, 5, 10 and 11. Applicants accordingly request that the rejection of these claims be withdrawn.

Claim Rejections – 35 U.S.C. § 103

The Examiner has rejected claims 1, 2, 4, 5, 7, 10-13, 27-29, 31-35, 37-42 and 44 under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 6,517,967 (Shrim).

Claim 44 has been cancelled, rendering the rejection of that claim moot.

Shrim does not suggest a battery can having a rectangular or polygonal cross-section, as each of these claims requires. A rectangle is a four-sided plane figure in which each angle is a right angle, see THE MERIAM-WEBSTER DICTIONARY 604 (New ed. 2004), while a polygon is a closed-plane figure bounded by straight lines, see THE MERIAM-WEBSTER DICTIONARY 557 (New ed. 2004). Shrim, on the other hand, discloses battery cans having two rounded edges (see, e.g., FIG. 1, 12A, 35 and 36 and col. 18, lines 17-19, and note that the battery cells that are depicted in the remaining figures refer back to the non-rectangular battery cell of FIG. 1; for example, each share a numerical reference number of 101). As Shrim fails to disclose a battery can having a rectangular or polygonal cross-section, Shrim fails to disclose or suggest each element of claims 1, 2, 4, 5, 7 , 10-13, 27-29, 31-35 and 37-42, and the rejection of these claims over Shrim should be withdrawn.

Additionally, the Examiner has acknowledged that Shrim does not disclose a seal assembly attached to an open end of the can, wherein the seal assembly comprises a seal and a current collector attached to the seal. The Examiner has asserted that “the battery must have a closed end in order to contain the battery parts and the battery must have a collector in order to transmit the current from the battery to the device.” Assuming without agreeing that this assertion is correct, Shrim still fails to disclose a seal and a current collector attached to the seal. For example, the battery of the Tuttle reference, discussed in greater detail below, lacks a current collector altogether. Further, a seal system analogous to the seal of Tuttle would not be expected to be attached to a current collector, were one present, given that the seal is located only at the periphery of the can. Given that Shrim provides no details regarding the interior of Shrim’s battery cell, and given that the Examiner’s unsupported assertion still does not cover each

limitation of claims 1, 2, 4, 5, 7 and 10-13, these claims are non-obvious over Shrim for this additional reason.

Referring to claims 10 and 11, Shrim also fails to suggest a battery comprising a can, a cathode, and a barrier layer between the cathode and the can. Instead, Shrim discloses a PTFE layer between the battery system casing and a diffuser that overlays a battery cell. See col. 31, lines 47-54 and FIGS. 34A and 34B, in which battery cell 101 lies under diffuser 272 and PTFE layer 273.

Referring to claim 12, Shrim further fails to suggest a battery wherein the cathode and the can define an air plenum therebetween. Shrim instead discloses air plenums located outside of and between adjacent battery cans or between a battery can and a casing wall. See, e.g., FIG. 2 and col. 19, lines 46-61.

Referring to claims 13, 29, 35 and 42, Shrim fails to suggest a battery having a can with a square cross-section. Even assuming that “a square is a rectangle with all four sides equal,” as asserted by the Examiner, Shrim fails to disclose or suggest a battery can having a rectangular cross-section in which all four sides are equal. Clearly, the cross-section of the battery of FIG. 1 has sides of unequal length, in addition to having two rounded edges.

Referring to claims 27-29 and 31-32, Shrim makes no reference to the physical configuration of the cathode, and thus does not suggest a cathode defining a cavity.

For at least these reasons, Applicants request withdrawal of the rejection of claims 1, 2, 4, 5, 7, 10-13, 27-29, 31-35 and 37-42 under 35 U.S.C. § 103(a) over Shrim.

The Examiner has rejected claims 21, 22, 24-26, 30, 36 and 43 under 35 U.S.C. § 103(a) as obvious over Shrim in view of U.S. Patent 5,725,967 (Tuttle).

As noted above, Shrim fails to suggest a seal and a current collector attached to the seal, as required by claims 21, 22, 24-26, 36 and 43. Tuttle does not remedy this deficiency. Tuttle is concerned primarily with button cell batteries. See, e.g., Background, FIGS. 1-4 (i.e. all of the figures), and col. 23-29. Button cell batteries typically do not have a current collector, as the anode is in direct contact with the cover or lid of the battery. Consistent with this absence of a current collector, Tuttle nowhere refers to a current collector, despite referring to the presence of an anode, a cathode, a separator, and an electrolyte contained within the housing. See col. 8-10. Thus, Tuttle cannot be used to supply this limitation.

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Tuttle also fails to remedy the deficiency of Shrim with regard to claim 30, in that Tuttle fails to disclose or suggest a cathode defining a cavity.

For at least these reasons, Applicants request withdrawal of the rejection of claims 21, 22, 24-26, 30, 36 and 43 under 35 U.S.C. § 103(a) over Shrim in view of Tuttle.

The Examiner has rejected claim 23 under 35 U.S.C. § 103(a) as obvious over Daniel-Ivad in view of Tuttle.

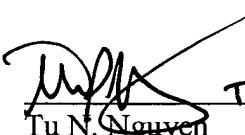
To sustain this obviousness rejection, the Examiner must show motivation of one of skill in the art to combine Tuttle with Daniel-Ivad. Tuttle is concerned primarily with button cell batteries. See, e.g., Background, FIGS. 1-4 (i.e. all of the figures), and col. 2, line 67 – col. 3, line 10. Button cell batteries typically do not have a current collector extending into the anode material, as the anode is in direct contact with the cover or lid of the battery. Consistent with this absence of a current collector, Tuttle nowhere refers to a current collector, despite referring to the presence of an anode, a cathode, a separator, and an electrolyte contained within the housing. See col. 8-10. Thus, one of skill in the art would not look to combine Tuttle with Daniel-Ivad, as Daniel-Ivad is directed to non-button cell batteries.

For at least the reasons presented above, Applicants believe that the claims are in condition for allowance, which action is hereby requested.

Please apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

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Tu N. Nguyen
Reg. No. 42,934

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110
Telephone: (617) 542-5070
Facsimile: (617) 542-8906
21134156.doc